REMARKS

Favorable reconsideration is respectfully requested.

The claims are 34, 35, 37, 38, 40-42 and 47-50. Claims 34, 35, and 40-42 are currently amended. New claims 47-50 are added. Claims 1-33, 36, 39, and 43-46 are canceled.

The "rod-shaped crystal" amendment to claims 34 and 35 is supported at page 3-4, bridge paragraph of the specification.

The "water-soluble metal salt and dextran" amendment to claims 34, 40 and 41 is supported at pages 4-5, bridge paragraph of the specification.

The "at least two kinds of water-soluble metal salt" amendment to claim 35 is supported at page 10, first full paragraph of the specification.

New claim 47 is supported in original claim 2.

New claim 48 is supported at pages 3-4, bridge paragraph of the specification.

New claims 49 and 50 are supported at page 4, first full paragraph of the specification.

No new matter is added.

Claim Rejections - 35 U.S.C. §112

Claims 45 and 46 are rejected under 35 U.S.C. §112 as being indefinite. Claims 45 and 46 are canceled by this amendment thus rendering this rejection moot.

Prior Art Rejections

Claims 34, 37, 39, and 45-46 are rejected under 35 U.S.C. §102(b) as being anticipated by Helliker et al. (U.S. 4,225,346).

Claims 34-35, 37, 39, and 45-46 are rejected under 35 U.S.C. §102(b) as being anticipated by Hoshino et al. (U.S. 6,117,592).

Claim 36 is rejected under 35 U.S.C. §102(a) as being anticipated by Zhang et al. (*Starch Gel Templating of Spongelike Macroporous silicalite monoliths and mesoporous films,* Chem. Mater. Published January 19, 2002).

Claims 38 and 40-41 are rejected under 35 U.S.C. §103(a) as being unpatentable over

Helliker et al.

Claims 38 and 40-41 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hoshino et al.

Claims 34-42 and 45-46 are rejected under 35 U.S.C. §103(a) as being unpatentable over Mulaskey (U.S. 4,102,822).

Claim 42 is rejected under 35 U.S.C. §103(a) as being unpatentable over Zhang et al. in view of Gilleland et al. (U.S. 6,528,088).

Applicants respectfully traverse each of these rejections.

1. The Present Invention

In the current claim amendment, the features of the present invention that make the present claims patentable over the prior art are clarified. See e.g., Examples 1, 2 and 4 of the specification.

The present invention uses a water-soluble metal salt and dextran to form an aqueous viscous solution. The use of a water-soluble metal salt enables the formation of a metal or metal oxide porous material with a homogenous porous structure, because the salt homogenously dissolves in the aqueous viscous solution. As further explained below, the prior art uses metal powders or metal oxide powders as raw materials which form inhomogeneous porous structures.

In addition, the use of dextran enables the preparation at room temperature of a solid which can then be baked. This reduces production costs and makes the production process much simpler. The prior art uses cellulose derivatives, such as starch, etc., and does not disclose or suggest the use of dextran. The use of cellulose derivatives disclosed in the prior art require heating to form the solid that is formed before baking, due to the poor solubility of cellulose derivatives in water. This complicates the process and drives up the cost.

The present invention also provides a method for preparing a homogenous porous material even when two or more types of water-soluble metal salts are used. This is possible because the metal salts dissolve homogenously in the aqueous viscous solution, much the same as the case when using one kind of water-soluble metal salt. Furthermore, additives such as

plasticizers, organic solvents, etc., are not required by the present invention.

2. *Helliker et al.*

Helliker et al. teaches a method of making a porous nickel body comprising the steps of mixing an aqueous solution of modified cellulose and nickel power. The process includes allowing the mixture to gel and then sintering the gel at 600-1200 °C. An alkyl cellulose is exemplified as the modified cellulose.

However, the nickel powder of Helliker et al. is not soluble in water as in the present invention. Therefore, the metal cannot be mixed and dispersed homogenously in the gel. Moreover, the gel mixture which is sintered is prepared by mixing together an aqueous solution of modified cellulose and nickel powder and heating the mixture to a temperature between 50-120 °C. This is necessary in order to impart water-solubility to the modified cellulose for gelation and involves additional processing and higher cost.

Accordingly, Helliker et al. does not disclose or suggest all of the features of the present claims.

3. *Hoshino et al.*

Hoshino et al. discloses a method of making porous metallic metal powders. The Hoshino et al. method includes forming an aqueous mixture of one or more metal powders from an organic solvent and a water-soluble resin binder. The water-soluble resin binder is selected from methyl cellulose, hydroxypropylmethyl cellulose, hydroxyethylmethyl cellulose, carboxymethyl cellulose ammonium, ethyl cellulose, and polyvinyl alcohol. The Hoshino et al. method also uses a plasticizer and water, and includes the steps of forming a molded product, burning, and sintering. Nickel, copper, silver, gold, etc., are exemplified as the metal powders.

However, in Hoshino et al., the metal powder is not soluble in water, and therefore the metal powder cannot be mixed and dispersed homogenously in the molded product. Moreover, the use of a water-soluble resin binder, as discussed above, requires heating in order to impart water-solubility for gelation. This requires additional processing and higher cost. Hoshino et al.

also uses additives such as plasticizers, and organic solvents. In particular, Hoshino et al. uses hydrocarbon organic solvents and surfactants for foaming. As discussed above, the present invention does not use such additives.

Accordingly, Hoshino et al. does not disclose or suggest all of the features of the present claims.

4. Zhang et al. (in view of Gilleland)

Zhang et al. discloses a method of forming a porous monolith. The Zhang et al. method comprises the steps of mixing a colloidal silicalite (colloid metal oxide), potato starch, and water, allowing the mixture to gel, and calcining the mixture at 600 °C.

However, the Zhang et al. colloid metal oxide is not soluble in water, and therefore the colloid metal oxide cannot be mixed and dispersed homogenously in the gel.

The starch sponges are prepared by heating a suspension of potato starch to 85 °C to form starch gel, cooling to room temperature, infiltrating with colloidal suspensions of silicalite nanoparticles, and air-drying. It is apparent that this method is quite different from the present invention, since a heating step is required to dissolve the starch. Accordingly, Zhang et al. in view of Gilleland does not disclose or suggest all of the features of the present claims.

Furthermore, the Gilleland reference, which is cited in combination with Zhang et al., is only relevant to starch, and does not mention dextran. Thus, Gilleland is non-analogous art and one of skill in the art would have no motivation to combine this reference with Zhang et al.

5. Mulaskey

Mulaskey discloses a method of making a porous catalyst which comprises preparing a dough-like mixture of water with a cohesive component and a pulverizable solid component. The method then involves shaping the dough-like mixture, drying, and calcining at a temperature of 200-950 °C. Organic hydrocolloid-forming compounds having a molecular weight above 1000, such as wheat flour, corn starch, guar gum, and polysaccharide gums, such as xanthan gum, are exemplified as the cohesive component. Particles of a refractory oxide and a catalytic

agent are exemplified as the pulverizable solid component.

However, the Mulaskey pulverizable solid component is not soluble in water. Therefore, this material cannot be mixed and dispersed homogenously in the gel. Moreover, the use of a cohesive component, as mentioned above, requires heating in order to impart water-solubility for gelation. This requires additional processing and higher cost.

Accordingly, Mulaskey does not disclose or suggest all of the features of the present claims.

Each of the prior art rejections pending in the outstanding Office Action have therefore been overcome.

No further issues remaining, allowance of this application is respectfully requested.

If the Examiner has any comments or proposals for expediting prosecution, please contact undersigned at the telephone number below.

Respectfully submitted,

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October 1, 2008